



PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Bo Su Chen, et al.

Serial No.: 10/622,042

Examiner: unknown

Filing Date: July 17, 2003

Group Art: unknown

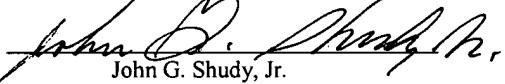
For: OPTICAL COUPLING SYSTEM

Docket No.: H0004315 (1139.1131101)

**TRANSMITTAL SHEET**

Assistant Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

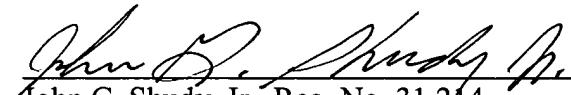
**CERTIFICATE UNDER 37 C.F.R. 1.8:** I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on this 13th day of November, 2003.

By:   
John G. Shudy, Jr.

We are transmitting herewith the attached:

Information Disclosure Statement, Form PTO-1449 and 89 cited non-US patent references.

Please charge any deficiencies or credit any overpayment in the enclosed fees to Deposit Account No. 50-0413.

  
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**INFORMATION DISCLOSURE STATEMENT (37 C.F.R. §1.97(b))**

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By: John G. Shudy, Jr.

Dear Sir:

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted before the mailing date of a first Office Action on-the-merits. Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

In accordance with 37 C.F. R. §1.98(a)(2), a copy of each non-US patent or other information listed on the enclosed Form 1449 is provided.

No representation is intended to be made hereby that any of the cited references establishes, by itself or in combination with other information, a prima facie case of unpatentability of any claim of the present case.

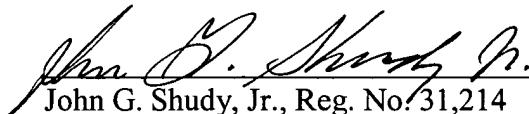
Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Respectfully submitted,

Bo Su Chen, et al.

By their attorney,

Dated: 11/13/03

  
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| Page 8 of 13 | FORM PTO-1449   | O I P E<br>NOV 17 2003<br>P A T E N T & T R A D E M A R K O F F I C E L C S | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042     |
|              | LIST OF PATENTS AND PUBLICATIONS FOR<br>APPLICANT'S INFORMATION<br>DISCLOSURE STATEMENT |   | Applicant: Bo Su Chen et al.                    | Filing Date:<br>July 17, 2003 |

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|  |   |
|--|---|
|  | Banwell et al., "VCSE Laser Transmitters for Parallel Data Links", <u>IEEE Journal of Quantum Electronics</u> , Vol. 29, No. 2, February 1993, pp. 635-644.   |
|  | Bowers et al., "Fused Vertical Cavity Lasers With Oxide Aperture", Final report for MICRO project 96-042, Industrial Sponsor: Hewlett Packard, 4 pages, 1996-97.  |
|  | Catchmark et al., "High Temperature CW Operation of Vertical Cavity Top Surface-Emitting Lasers", CLEO 1993, p. 138.  |
|  | Chemla et al., "Nonlinear Optical Properties of Semiconductor Quantum Wells", <u>Optical Nonlinearities and Instabilities in Semiconductors</u> , Academic Press, Inc., Copyright 1988, pp. 83-120.   |
|  | Choe, et al., "Lateral oxidation of AlAs layers at elevated water vapour pressure using a closed-chamber system," Letter to the Editor, <u>Semiconductor Science Technology</u> , 15, pp. L35-L38, August 2000.   |
|  | Choa et al., "High-Speed Modulation of Vertical-Cavity Surface-Emitting Lasers", <u>IEEE Photonics Technology Letter</u> , Vol. 3, No. 8, August 1991, pp. 697-699.   |
|  | Choquette et al., "High Single Mode Operation from Hybrid Ion Implanted/Selectively Oxidized VCSELs", 200 IEEE 17th International Semiconductor Laser Conference, Monterrey, CA pages 59-60.  |
|  | Choquette et al., "Lithographically-Defined Gain Apertures Within Selectively Oxidized VCSELs", paper CtuL6, Conference on Lasers and Electro-Optics, San Francisco, California (2000).   |
|  | Choquette, et al., "VCSELs in information systems: $10\text{Gbps}^{-1}$ oxide VCSELs for data communication", <u>Optics In Information Systems</u> , Vol. 12, No. 1, page 5, SPIE International Technical Group Newsletter, April 2001.   |
|  | Chua, et al., "Low-Threshold $1.57\text{- }\mu\text{m}$ VC-SEL's Using Strain-Compensated Quantum Wells and Oxide/Metal Backmirror," <u>IEEE Photonics Technology Letters</u> , Vol 7, No. 5, pp. 444-446, May 1995.  |
|  | Chua, et al., "Planar Laterally Oxidized Vertical-Cavity Lasers for Low-Threshold High-Density Top-Surface-Emitting Arrays," <u>IEEE Photonics Technology Letters</u> , Vol. 9, No. 8, pp. 1060-1062, August 1997.  |
|  | Cox, J. A., et al., "Guided Mode Grating Resonant Filters for VCSEL Applications", <u>Proceedings of the SPIE</u> , The International Society for Optical Engineering, Diffractive and Holographic Device Technologies and Applications V, San Jose, California, January 28-29, 1998, Vol. 3291, pages 70-71. |
|  | Farrier, Robert G., "Parametric control for wafer fabrication: New CIM techniques for data analysis," <u>Solid State Technology</u> , pp. 99-105, September 1997.   |

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|--------------|---|---|---|---------------------------|
| Page 9 of 13 | FORM PTO-1449   | Q I P E<br>NY 17 2003<br>PATENTS & TRADEMARKS | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042 |
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|              |   | Filing Date:<br>July 17, 2003                 | Group Art:<br>unknown                           |                           |

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|--|--|
|  | Fushimi, et al., "Degradation Mechanism in Carbon-doped GaAs Minority-carrier Injection Devices," 34 <sup>th</sup> Annual IRPS Proceedings, Dallas, TX., April 29-May 2, 1996, 8 pages.  |
|  | G. G. Ortiz, et al., "Monolithic Integration of In0.2 GA0.8As Vertical Cavity Surface-Emitting Lasers with Resonance-Enhanced Quantum Well Photodetectors", <u>Electronics Letters</u> , Vol. 32, No. 13, June 20, 1996, pp. 1205-1207.                |
|  | G. Shtengel et al., "High-Speed Vertical-Cavity Surface-Emitting Lasers", <u>Photon. Tech. Lett.</u> , Vol. 5, No. 12, pp. 1359-1361 (December 1993).  |
|  | Geib, et al., "Comparison of Fabrication Approaches for Selectively Oxidized VCSEL Arrays," Proceedings of SPIE, Vol. 3946, pages 36-40, 2000.   |
|  | Graf, Rudolph, <u>Modern Dictionary of Electronics</u> , 6 <sup>th</sup> ed., Indiana: Howard W. Sams & Company, 1984, p. 694.   |
|  | Guenter et al., "Reliability of Proton-Implanted VCSELs for Data Communications", Invited paper, <u>SPIE</u> , Vol. 2683, OE LASE 96; Photonics West: Fabrication, Testing and Reliability of Semiconductor Lasers, (SPIE, Bellingham, WA 1996).       |
|  | Guenter, et al., "Commercialization of Honeywell's VCSEL technology: further developments," Proceedings of the SPIE, Vol. 4286, GSPIE 2000, 14 pages.  |
|  | Hadley et al., "High-Power Single Mode Operation from Hybrid Ion Implanted/Selectively Oxidized VCSELs", 13th Annual Meeting IEEE Lasers and Electro-Optics Society 2000 Annual Meeting (LEOS 2000), Rio Grande, Puerto Rico, pages 804-805.           |
|  | Hawthorne, et al., "Reliability Study of 850 nm VCSELs for Data Communications," IEEE, pages 1-11, May 1996.   |
|  | Herrick, et al., "Highly reliable oxide VCSELs manufactured at HP/Agilent Technologies," Invited Paper, Proceedings of SPIE Vol. 3946, pp. 14-19, 2000.  |
|  | Hibbs-Brenner et al., "Performance, Uniformity and Yield of 850nm VCSELs Deposited by MOVPE", <u>IEEE Phot. Tech. Lett.</u> , Vol. 8, No. 1, pp. 7-9, January 1996.  |
|  | Hideaki Saito, et al., "Controlling polarization of quantum-dot surface-emitting lasers by using structurally anisotropic self-assembled quantum dots," American Institute of Physics, <u>Appl. Phys. Lett.</u> 71 (5), pages 590-592, August 4, 1997. |
|  | Hornak et al., "Low-Termperature (10K-300K) Characterization of MOVPE-Grown Vertical-Cavity Surface-Emitting Lasers", <u>Photon. Tech. Lett.</u> , Vol. 7, No. 10, pp. 1110-1112, October 1995.  |
|  | Huffaker et al., "Lasing Characteristics of Low Threshold Microcavity Layers Using Half-Wave Spacer Layers and Lateral Index Confinement", <u>Appl. Phys. Lett.</u> , Vol. 66, No. 14, pp.1723-1725, April 3, 1995.                                    |
|  | Jewell et al., "Surface Emitting Microlasers for Photonic Switching & Intership Connections", <u>Optical Engineering</u> , Vol. 29, No. 3, pp. 210-214, March 1990.  |

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|--|--|---|----------------------------|-------------|
| FORM PTO-1449  |  | <br>NOV 17 2003 | Atty. Docket No.:          | Serial No.: |
| Page 10 of 13  |  |   | H0004315<br>(1139.1131101) | 10/622,042  |
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|  |  | Filing Date:  | Group Art:                 |             |
|  |  | July 17, 2003   | unknown                    |             |

|  |  |
|--|--|
|  | Jiang et al., "High-Frequency Polarization Self-Modulation in Vertical-Cavity Surface-Emitting Lasers", <u>Appl. Phys. Letters</u> , Vol. 63, No. 26, December 27, 1993, pp. 2545-2547.  |
|  | K.L. Lear et al., "Selectively Oxidized Vertical Cavity Surface-Emitting Lasers with 50% Power Conversion Efficiency", <u>Elec. Lett.</u> , Vol. 31, No. 3 pp. 208-209, February 2, 1995.  |
|  | Kash, et al., "Recombination in AlAs at the AlAs oxide-GaAs interface," <u>Applied Physics Letters</u> , Vol. 67, No.14, pp. 2022-2024, October 2, 1995.   |
|  | Kishino et al., "Resonant Cavity-Enhanced (RCE) Photodetectors", <u>IEEE Journal of Quantum Electronics</u> , Vol. 27, No. 8, pp. 2025-2034.   |
|  | Koley B., et al., "Dependence of lateral oxidation rate on thickness of AlAs layer of interest as a current aperture in vertical-cavity surface-emitting laser structures", <u>Journal of Applied Physics</u> , Vol. 84, No. 1, pages 600-605, July 1, 1998. |
|  | Kuchibhotla et al., "Low-Voltage High Gain Resonant Cavity Avalanche Photodiode", <u>IEEE Phototonics Technology Letters</u> , Vol. 3, No. 4, pp. 354-356.   |
|  | Lai et al., "Design of a Tunable GaAs/AlGaAs Multiple-Quantum-Well Resonant Cavity Photodetector", <u>IEEE Journal of Quantum Electronics</u> , Vol. 30, No. 1, pp. 108-114.   |
|  | Lee et al., "Top-Surface Emitting GaAs Four-Quantum-Well Lasers Emitting at 0-85 um", <u>Electronics Letters</u> , Vol. 24, No. 11, May 24, 1990, pp. 710-711.   |
|  | Lehman et al., "High Frequency Modulation Characteristics of Hybrid Dielectric/AlGaAs Mirror Singlemode VCSELs", <u>Electronic Letters</u> , vol. 31, No. 15, July 20, 1995, pp. 1251-1252.  |
|  | Maeda, et al., "Enhanced Glide of Dislocations in GaAs Single Crystals by Electron Beam Irradiation," <u>Japanese Journal of Applied Physics</u> , Vol. 20, No. 3, pages L165-L168, March 1981.  |
|  | Magnusson, "Integration of Guided-Mode Resonance Filters and VCSELs", <u>Electro-Optics Research Center, Department of Electrical Engineering, University of Texas at Arlington</u> , May 6, 1997.   |
|  | Martinsson et al., "Transverse Mode Selection in Large-Area Oxide-Confined Vertical-Cavity Surface-Emitting Lasers Using a Shallow Surface Relief", <u>IEEE Photon. Technol. Lett.</u> , 11(12), 1536-1538 (1999).   |
|  | Miller et al., "Optical Bistability Due to Increasing Absorption", <u>Optics Letters</u> , Vol. 9, No. 5, May 1984, pp. 162-164.   |
|  | Min Soo Park and Byung Tae Ahn, "Polarization control of vertical-cavity surface-emitting lasers by electro-optic birefringence," <u>Applied Physics Letter</u> , Vol. 76, No. 7, pages 813-815, February 14, 2000.  |
|  | Morgan et al., "200 C, 96-nm Wavelength Range, Continuous-Wave Lasing from Unbonded GaAs MOVPE-Grown Vertical Cavity Surface-Emitting Lasers", <u>IEEE Photonics Technology Letters</u> , Vol. 7, No. 5, May 1995, pp. 441-443.                              |

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|---------------|---|---|---|-------------------------------|
| Page 11 of 13 | FORM PTO-1449   | O I P E<br>N C V 1 7 2 0 0 3<br>P A T E N T S / T R A D E M A R K O F F I C E | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042     |
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|  |   |
|--|---|
|  | Morgan et al., "High-Power Coherently Coupled 8x8 Vertical Cavity Surface Emitting Laser Array", <u>Appl. Phys Letters</u> , Vol 61, No. 10, September 7, 1992, pp. 1160-1162.  |
|  | Morgan et al., "Hybrid Dielectric/AlGaAs Mirror Spatially Filtered Vertical Cavity Top-Surface Emitting Laser", <u>Appl. Phys. Letters</u> , Vol. 66, No. 10, March 6, 1995, pp. 1157-1159.                           |
|  | Morgan et al., "Novel Hibrid-DBR Single-Mode Controlled GaAs Top-Emitting VCSEL with Record Low Voltage", 2 pages, dated prior to December 29, 2000.  |
|  | Morgan et al., "One Watt Vertical Cavity Surface Emitting Laser", <u>Electron. Lett.</u> , Vol. 29, No. 2, pp. 206-207, January 21, 1993  |
|  | Morgan et al., "Producible GaAs-based MOVPE-Grown Vertical-Cavity Top-Surface Emitting Lasers with Record Performance", <u>Elec. Lett.</u> , Vol. 31, No. 6, pp. 462-464, March 16, 1995.                             |
|  | Morgan et al., "Progress and Properties of High-Power Coherent Vertical Cavity Surface Emitting Laser Arrays", <u>SPIE</u> , Vo. 1850, January 1993, pp. 100-108.   |
|  | Morgan et al., "Progress in Planarized Vertical Cavity Surface Emitting Laser Devices and Arrays", <u>SPIE</u> , Vol. 1562, July 1991, pp. 149-159.   |
|  | Morgan et al., "Spatial-Filtered Vertical-Cavity Top Surface-Emitting Lasers", CLEO, 1993, pp. 138-139.   |
|  | Morgan et al., "Submilliamp, Low-Resistance, Continuous-Wave, Single-Mode GaAs Planar Vertical-Cavity Surface Emitting Lasers", Honeywell Technology Center, June 6, 1995.  |
|  | Morgan et al., "Transverse Mode Control of Vertical-Cavity Top-Surface Emitting Lasers", <u>IEEE Photonics Technology Letters</u> , Vol. 4, No. 4, April 1993, pp. 374-377.   |
|  | Morgan et al., "Vertical-cavity surface-emitting laser arrays", Invited Paper, <u>SPIE</u> , Vol. 2398, February 6, 1995, pp. 65-93.  |
|  | Morgan et al., "Vertical-cavity surface emitting lasers come of age, Invited paper, <u>SPIE</u> , Vol. 2683, 0-8194-2057, March 1996, pages 18-29.  |
|  | Morgan, "High-Performance, Producible Vertical Cavity Lasers for Optical Interconnects", <u>High Speed Electronics and Systems</u> , Vol. 5, No. 4, December 1994, pp. 65-95.   |
|  | Naone R.L., et al., "Tapered-apertures for high-efficiency miniature VCSELs", LEOS newsletter, Vol. 13, No. 4, pages 1-5, August 1999.  |
|  | Nugent et al., "Self-Pulsations in Vertical-Cavity Surface-Emitting Lasers", <u>Electronic Letters</u> , Vol. 31, No. 1, January 5, 1995, pp. 43-44.  |
|  | Oh, T. H. et al., "Single-Mode Operation in Antiguide Vertical-Cavity Surface-Emitting Laser Using a Low-Temperature Grown AlGaAs Dielectric Aperture", <u>IEEE Photon. Technol. Lett.</u> , 10(8), 1064-1066 (1998). |

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LIST OF PATENTS AND PUBLICATIONS FOR  
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|--|--|
|  | Osinski, et al., "Temperature and Thickness Dependence of Steam Oxidation of AlAs in Cylindrical Mesa Structure," <i>IEEE Photonics Technology Letters</i> , Vol. 13, No. 7, pages 687-689, July 2001.   |
|  | Peck, D. Stewart, "Comprehensive Model for Humidity Testing Correlation, IEEE/IRPS, pp. 44-50, 1986.   |
|  | Ries, et al., "Visible-spectrum ( $\lambda = 650\text{nm}$ ) photopumped (pulsed, 300 K) laser operation of a vertical-cavity AlAs-AlGaAs/InAlP-InGaP quantum well heterostructure utilizing native oxide mirrors," <i>Applied Physics Letters</i> , Vol. 67, No. 8, pages 1107-1109, August 21, 1995. |
|  | S.S. Wang and R. Magnusson, "Multilayer Waveguide-Grating Filters", <i>Appl. Opt.</i> , Vol. 34, No. 14, pp. 2414-20, 1995.  |
|  | S.S. Wang and R. Magnusson, "Theory and Applications of Guided-Mode Resonance Filters", <i>Appl. Opt.</i> , Vol. 32, No. 14, pp. 2606-13, 1993.  |
|  | Sah, et al., "Carrier Generation and Recombination in P-N Junctions and P-N Junction Characteristics," <i>Proceedings of the IRE</i> , pages 1228-1243, September, 1957.   |
|  | Schubert, "Resonant Cavity Light-Emitting Diode", <i>Appl. Phys. Lett.</i> , Vol. 60, No. 8, pp. 921-923, February 24, 1992.   |
|  | Shi, et al., "Photoluminescence study of hydrogenated aluminum oxide-semiconductor interface," <i>Applied Physics Letters</i> , Vol. 70, No. 10, pages 1293-1295, March 10, 1997.  |
|  | Smith, R.E. et al., "Polarization-Sensitive Subwavelength Antireflection Surfaces on a Semiconductor for 975 NM", <i>Optics Letters</i> , Vol. 21, No. 15, August 1, 1996, pp. 1201-1203.  |
|  | Spicer, et al., "The Unified Model For Schottky Barrier Formation and MOS Interface States in 3-5 Compounds," <i>Applications of Surface Science</i> , Vol. 9, pages 83-01, 1981.  |
|  | Suning Tang et al., "Design Limitations of Highly Parallel Free-Space Optical Interconnects Based on Arrays of Vertical Cavity Surface-Emitting Laser Diodes, Microlenses, and Photodetectors", <i>Journal of Lightwave Technology</i> , Vol. 12, No. 11, November 1, 1994, pp. 1971-1975.             |
|  | T. Mukaihara, "Polarization Control of Vertical-cavity Surface-Emitting Lasers by a Birefringent Metal/Semiconductor Polarizer Terminating a Distributed Bragg Reflector," <i>Tokyo Institute of Technology, Precision and Intelligence Laboratory</i> , pages 183-184.                                |
|  | Tao, Andrea, "Wet-Oxidation of Digitally Alloyed AlGaAs," <i>National Nanofabrication Users Network, Research Experience for Undergraduates 2000</i> , 2 pages.  |
|  | Tautm, et al., "Commercialization of Honeywell's VCSEL Technology, Published in Proceedings fo the SPIE, Vol. 3946, SPI, 2000, 12 pages.   |
|  | Tshikazu Mukaihara, et al., "A Novel Birefringent Distributed Bragg Reflector Using a Metal/Dielectric Polarizer for Polarization Control of Surface-Emitting Lasers," <i>Japan J. Appl. Phys.</i> Vol. 33 (1994) pages L227-L229, Part 2, No. 2B, February 15, 1994.                                  |



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|---|---------------|---|---------------------------|
| Page 13 of 13   | FORM PTO-1449 | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042 |
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|--|---|
|  | Tu, Li-Wei et al., "Transparent conductive metal-oxide contacts in vertical-injection top-emitting quantum well lasers", <i>Appl. Phys. Lett.</i> 58 (8) 25 February 1991, pages 790-792.                           |
|  | Wieder, H.H., "Fermi level and surface barrier of $\text{Ga}_x\text{In}_{1-x}\text{As}$ alloys," <i>Applied Physics Letters</i> , Vol. 38, No. 3, pages 170-171, February 1, 1981.                                  |
|  | Wipiejewski, et al., "VCSELs for datacom applications," Invited Paper, Part of the SPIE Conference on Vertical-Cavity Surface-Emitting Lasers III, San Jose, California, SPIE Vol. 3627, pages 14-22, January 1999. |
|  | Y. M. Yang et al., "Ultralow Threshold Current Vertical Cavity Surface Emitting Lasers Obtained with Selective Oxidation", <i>Elect. Lett.</i> , Vol. 31, No. 11, pp. 886-888, May 25, 1995.                        |
|  | Yablonovitch et al., "Photonic Bandgap Structures", <i>J. Opt. Soc. Am. B.</i> , Vol. 10, No. 2, pp. 283-295, February 1993.  |
|  | Young et al., "Enhanced Performance of Offset-Gain High Barrier Vertical-Cavity Surface-Emitting Lasers", <i>IEEE J. Quantum Electron.</i> , Vol. 29, No. 6, pp. 2013-2022, June 1993.                              |
|  | U.S. Patent Application Serial No. 09/751,422, filed December 29, 2000, entitled "Resonant Reflector for Use with Optoelectronic Devices".  |
|  | U.S. Patent Application Serial No. 09/751,423, filed December 29, 2000, entitled "Spatially Modulated Reflector for an Optoelectronic Device".  |

EXAMINER:

DATE CONSIDERED:

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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| Page 7 of 13   |  | FORM PTO-1449   | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042 |
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|  |  | Applicant: Bo Su Chen et al.  |   |                           |
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| Examiner Initial | Document No. | Date       | Name           | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|------------|----------------|-------|-----------|----------------------------|
|                  | 6,487,230    | 11/26/2002 | Boucart et al. |       |           |                            |
|                  | 6,487,231    | 11/26/2002 | Boucart et al. |       |           |                            |
|                  | 6,490,311    | 12/03/2002 | Boucart et al. |       |           |                            |
|                  | 6,493,371    | 12/10/2002 | Boucart et al. |       |           |                            |
|                  | 6,493,372    | 12/10/2002 | Boucart et al. |       |           |                            |
|                  | 6,493,373    | 12/10/2002 | Boucart et al. |       |           |                            |
|                  | 6,496,621    | 12/17/2002 | Kathman et al. |       |           |                            |
|                  | 6,498,358    | 12/24/2002 | Lach et al.    |       |           |                            |
|                  | 6,501,973    | 12/31/2002 | Foley et al.   |       |           |                            |
|                  | 6,515,308    | 02/04/2003 | Kneissl et al. |       |           |                            |
|                  | 6,535,541    | 03/18/2003 | Boucart et al. |       |           |                            |
|                  | 6,536,959    | 03/25/2003 | Kuhn et al.    |       |           |                            |
|                  | 6,542,531    | 04/01/2003 | Sirbu et al.   |       |           |                            |
|                  | 6,567,435    | 05/20/2003 | Scott et al.   |       |           |                            |

#### FOREIGN PATENT DOCUMENTS

| Examiner Initial | Document No.  | Date       | Country | Translation<br>Yes No |
|------------------|---------------|------------|---------|-----------------------|
| ✗                | JP 60123084   | 01/07/1985 | JP      | Abstract              |
| ✗                | EP 0288184 A2 | 10/26/1988 | EP      |                       |
|                  | JP 02054981   | 02/23/1990 | JP      | Abstract              |
| ✗                | JP 5299779    | 11/12/1993 | JP      | Abstract              |
| ✗                | DE 4240706 A1 | 06/09/1994 | DE      | Abstract              |
| ✗                | EP 0776076 A1 | 05/28/1997 | EP      | Abstract              |
| ✗                | WO 98/57402   | 12/17/1998 | PCT     |                       |

|  |  |  |   |                           |
|--|--|--|---|---------------------------|
| Page 6 of 13   |  | FORM PTO-1449  | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042 |
| <b>LIST OF PATENTS AND PUBLICATIONS FOR<br/>APPLICANT'S INFORMATION<br/>DISCLOSURE STATEMENT</b> |  | O I P E<br>NCV 17 2003<br>PATENT & TRADEMARK OFFICE<br>USPTO |   |                           |
|  |  | Applicant: Bo Su Chen et al.                                 |   |                           |
|  |  | Filing Date:<br>July 17, 2003                                | Group Art:<br>unknown                           |                           |

| Examiner Initial | Document No. | Date       | Name                | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|------------|---------------------|-------|-----------|----------------------------|
|                  | 6,133,590    | 10/17/2000 | Ashley et al.       |       |           |                            |
|                  | 6,144,682    | 11/07/2000 | Sun                 |       |           |                            |
|                  | 6,154,480    | 11/28/2000 | Magnusson et al.    |       |           |                            |
|                  | 6,185,241    | 02/06/2001 | Sun                 |       |           |                            |
|                  | 6,191,890    | 02/20/2001 | Baets et al         |       |           |                            |
|                  | 6,208,681 B1 | 03/27/2001 | Thorton             |       |           |                            |
|                  | 6,212,312    | 04/03/2001 | Grann et al         |       |           |                            |
|                  | 6,238,944 B1 | 05/29/2001 | Floyd               |       |           |                            |
|                  | 6,269,109 B1 | 07/31/2001 | Jewell              |       |           |                            |
|                  | 6,297,068    | 10/02/2001 | Thornton            |       |           |                            |
|                  | 6,302,596    | 10/16/2001 | Cohen et al.        |       |           |                            |
|                  | 6,339,496    | 01/15/2002 | Koley et al.        |       |           |                            |
|                  | 6,369,403    | 04/09/2002 | Holonyak, Jr.       |       |           |                            |
|                  | 6,372,533 B2 | 04/16/2002 | Jayaraman et al.    |       |           |                            |
|                  | 6,392,257    | 05/21/2002 | Ramdani et al.      |       |           |                            |
|                  | 6,410,941    | 06/25/2002 | Taylor et al.       |       |           |                            |
|                  | 6,411,638    | 06/25/2002 | Johnson et al.      |       |           |                            |
|                  | 6,427,066    | 07/30/2002 | Grube               |       |           |                            |
|                  | 6,455,879    | 09/24/2002 | Ashley et al.       |       |           |                            |
|                  | 6,459,709    | 10/01/2002 | Lo et al.           |       |           |                            |
|                  | 6,459,713    | 10/01/2002 | Jewell              |       |           |                            |
|                  | 6,462,360    | 10/08/2002 | Higgins, Jr. et al. |       |           |                            |
|                  | 6,472,694    | 10/29/2002 | Wilson et al.       |       |           |                            |
|                  | 6,477,285    | 11/05/2002 | Shanley             |       |           |                            |

|  |  |  |                            |             |
|--|--|--|----------------------------|-------------|
| FORM PTO-1449  |  |  | Atty. Docket No.:          | Serial No.: |
| Page 5 of 13   |  |  | H0004315<br>(1139.1131101) | 10/622,042  |
| <b>LIST OF PATENTS AND PUBLICATIONS FOR<br/>APPLICANT'S INFORMATION<br/>DISCLOSURE STATEMENT</b> |  | Applicant: Bo Su Chen et al.   |                            |             |
|  |  | Filing Date:   |                            | Group Art:  |
|  |  | July 17, 2003  |                            | unknown     |

| Examiner Initial | Document No. | Date       | Name                 | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|------------|----------------------|-------|-----------|----------------------------|
|                  | 5,838,715    | 11/17/1998 | Corzine et al.       |       |           |                            |
|                  | 5,892,784    | 04/06/1999 | Tan et al.           |       |           |                            |
|                  | 5,892,787    | 04/06/1999 | Tan et al.           |       |           |                            |
|                  | 5,896,408    | 04/20/1999 | Corzine et al.       |       |           |                            |
|                  | 5,901,166    | 05/04/1999 | Nitta et al.         |       |           |                            |
|                  | 5,903,588    | 05/1999    | Guenter et al.       |       |           |                            |
|                  | 5,903,589    | 05/1999    | Jewell               |       |           |                            |
|                  | 5,903,590    | 05/11/1999 | Hadley et al.        |       |           |                            |
|                  | 5,908,408    | 06/1999    | McGary et al.        |       |           |                            |
|                  | 5,936,266    | 08/10/1999 | Holonyak, Jr. et al. |       |           |                            |
|                  | 5,940,422    | 08/17/1999 | Johnson              |       |           |                            |
|                  | 5,953,362    | 09/14/1999 | Pamulapati et al.    |       |           |                            |
|                  | 5,978,401    | 11/02/1999 | Morgan               |       |           |                            |
|                  | 5,978,408    | 11/1999    | Thornton             |       |           |                            |
|                  | 5,995,531    | 11/30/1999 | Gaw et al.           |       |           |                            |
|                  | 6,002,705    | 12/14/1999 | Thornton             |       |           |                            |
|                  | 6,008,675    | 12/28/1999 | Handa                |       |           |                            |
|                  | 6,014,395    | 01/11/2000 | Jewell               |       |           |                            |
|                  | 6,043,104    | 03/28/2000 | Uchida et al.        |       |           |                            |
|                  | 6,046,065    | 04/04/2000 | Goldstein et al.     |       |           |                            |
|                  | 6,055,262    | 04/25/2000 | Cox et al.           |       |           |                            |
|                  | 6,052,398    | 04/18/2003 | Brillouet et al.     |       |           |                            |
|                  | 6,060,743    | 05/09/2000 | Sugiyama et al.      |       |           |                            |
|                  | 6,078,601    | 06/20/2000 | Smith                |       |           |                            |
|                  | 6,086,263    | 07/11/2000 | Selli et al.         |       |           |                            |

|   |  |  |  |   |                           |
|---|--|--|--|---|---------------------------|
| FORM PTO-1449   |  | O I P E<br>NOV 17 2003<br>JC1-1<br>PATENT & TRADEMARK OFFICE |  | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042 |
| LIST OF PATENTS AND PUBLICATIONS FOR<br>APPLICANT'S INFORMATION<br>DISCLOSURE STATEMENT |  |  |  | Applicant: Bo Su Chen et al.                    |                           |
|   |  |  |  | Filing Date:<br>July 17, 2003                   | Group Art:<br>unknown     |

| Examiner Initial | Document No. | Date       | Name                  | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|------------|-----------------------|-------|-----------|----------------------------|
|                  | 5,598,300    | 01/28/1997 | Magnusson et al.      |       |           |                            |
|                  | 5,606,572    | 02/25/1997 | Swirhun et al.        |       |           |                            |
|                  | 5,625,729    | 04/29/1997 | Brown                 |       |           |                            |
|                  | 5,642,376    | 06/24/1997 | Olbright et al.       |       |           |                            |
|                  | 5,645,462    | 07/08/1997 | Banno et al.          |       |           |                            |
|                  | 5,646,978    | 07/08/1997 | Kem et al.            |       |           |                            |
|                  | 5,648,978    | 07/15/1997 | Sakata                |       |           |                            |
|                  | 5,679,963    | 10/21/1997 | Klem et al.           |       |           |                            |
|                  | 5,692,083    | 11/25/1997 | Bennett               |       |           |                            |
|                  | 5,696,023    | 12/09/1997 | Holonyak, Jr., et al. |       |           |                            |
|                  | 5,699,373    | 12/16/1997 | Uchida et al.         |       |           |                            |
|                  | 5,712,188    | 01/27/1998 | Chu et al.            |       |           |                            |
|                  | 5,726,805    | 03/10/1998 | Kaushik, et al.       |       |           |                            |
|                  | 5,727,013    | 03/10/1998 | Botez et al.          |       |           |                            |
|                  | 5,727,014    | 03/10/1998 | Wang et al.           |       |           |                            |
|                  | 5,774,487    | 06/30/1998 | Morgan                |       |           |                            |
|                  | 5,778,018    | 07/07/1998 | Yoshikawa et al.      |       |           |                            |
|                  | 5,781,575    | 07/14/1998 | Nilsson               |       |           |                            |
|                  | 5,784,399    | 07/21/1998 | Sun                   |       |           |                            |
|                  | 4,790,733    | 08/04/1998 | Smith et al.          |       |           |                            |
|                  | 5,805,624    | 09/08/1998 | Yang et al.           |       |           |                            |
|                  | 5,818,066    | 10/06/1998 | Duboz                 |       |           |                            |
|                  | 5,828,684    | 10/27/1998 | Van de Walle          |       |           |                            |
|                  | 5,838,705    | 11/17/1998 | Shieh et al.          |       |           |                            |

|               |  |   |                           |
|---------------|--|---|---------------------------|
| FORM PTO-1449 |  | Atty. Docket No.:<br>H0004315<br>(1139.1131101)           | Serial No.:<br>10/622,042 |
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**LIST OF PATENTS AND PUBLICATIONS FOR  
APPLICANT'S INFORMATION  
DISCLOSURE STATEMENT**

Applicant: Bo Su Chen et al.

|                               |                       |
|-------------------------------|-----------------------|
| Filing Date:<br>July 17, 2003 | Group Art:<br>unknown |
|-------------------------------|-----------------------|

| Examiner Initial | Document No. | Date       | Name                 | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|------------|----------------------|-------|-----------|----------------------------|
|                  | 5,390,209    | 02/14/1995 | Vakhshoori           |       |           |                            |
|                  | 5,396,508    | 03/17/1995 | Bour et al.          |       |           |                            |
|                  | 5,404,373    | 04/04/1995 | Cheng                |       |           |                            |
|                  | 5,412,678    | 05/02/1995 | Treat et al.         |       |           |                            |
|                  | 5,412,680    | 05/02/1995 | Swirhum et al.       |       |           |                            |
|                  | 5,416,044    | 05/16/1995 | Chino et al.         |       |           |                            |
|                  | 5,428,634    | 06/27/1995 | Bryan et al.         |       |           |                            |
|                  | 5,438,584    | 08/01/1995 | Paoli et al.         |       |           |                            |
|                  | 5,446,754    | 08/29/1995 | Jewell et al.        |       |           |                            |
|                  | 5,465,263    | 11/07/1995 | Bour et al.          |       |           |                            |
|                  | 5,475,701    | 12/12/1995 | Hibbs-Brenner        |       |           |                            |
|                  | 5,493,577    | 02/1996    | Choquette et al.     |       |           |                            |
|                  | 5,497,390    | 03/05/1996 | Tanaka et al.        |       |           |                            |
|                  | 5,513,202    | 04/30/1996 | Kobayashi et al.     |       |           |                            |
|                  | 5,530,715    | 06/25/1996 | Shieh et al.         |       |           |                            |
|                  | 5,555,255    | 09/10/1996 | Kock et al.          |       |           |                            |
|                  | 5,557,626    | 09/17/1996 | Grodinski et al.     |       |           |                            |
|                  | 5,561,683    | 10/01/1996 | Kwon                 |       |           |                            |
|                  | 5,567,980    | 10/22/1996 | Holonyak, Jr. et al. |       |           |                            |
|                  | 5,568,498    | 10/22/1996 | Nilsson              |       |           |                            |
|                  | 5,568,499    | 10/22/1996 | Lear                 |       |           |                            |
|                  | 5,574,738    | 11/12/1996 | Morgan               |       |           |                            |
|                  | 5,581,571    | 12/1996    | Holonyak, Jr. et al. |       |           |                            |
|                  | 5,586,131    | 12/17/1996 | Ono et al.           |       |           |                            |
|                  | 5,590,145    | 12/31/1996 | Nitta                |       |           |                            |

|   |  |  |   |                           |
|---|--|--|---|---------------------------|
| Page 2 of 13  |  | FORM PTO-1449<br>O I P E<br>NOV 17 2003<br>P A T E N T & T R A D E M A R K O F F I C E<br>S C 11 | Atty. Docket No.:<br>H0004315<br>(1139.1131101) | Serial No.:<br>10/622,042 |
| LIST OF PATENTS AND PUBLICATIONS FOR<br>APPLICANT'S INFORMATION<br>DISCLOSURE STATEMENT |  | Applicant: Bo Su Chen et al.   |   |                           |
|   |  | Filing Date:   |   | Group Art:                |
|   |  | July 17, 2003  |   | unknown                   |

| Examiner Initial | Document No. | Date       | Name                  | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|------------|-----------------------|-------|-----------|----------------------------|
|                  | 5,212,706    | 05/18/1993 | Jain                  |       |           |                            |
|                  | 5,216,263    | 06/01/1993 | Paoli                 |       |           |                            |
|                  | 5,216,680    | 06/01/1993 | Magnusson et al.      |       |           |                            |
|                  | 5,237,581    | 08/17/1993 | Asada et al.          |       |           |                            |
|                  | 5,245,622    | 09/14/1993 | Jewell et al.         |       |           |                            |
|                  | 5,258,990    | 11/02/1993 | Olbright et al.       |       |           |                            |
|                  | 5,262,360    | 11/16/1993 | Holonyak, Jr. et al.  |       |           |                            |
|                  | 5,285,466    | 02/08/1994 | Tabatabaie            |       |           |                            |
|                  | 5,293,392    | 03/08/1994 | Shieh et al.          |       |           |                            |
|                  | 5,317,170    | 05/31/1994 | Paoli                 |       |           |                            |
|                  | 5,317,587    | 05/31/1994 | Ackley et al.         |       |           |                            |
|                  | 5,325,386    | 06/28/1994 | Jewell et al.         |       |           |                            |
|                  | 5,331,654    | 07/19/1994 | Jewell et al.         |       |           |                            |
|                  | 5,337,074    | 08/09/1994 | Thornton              |       |           |                            |
|                  | 5,337,183    | 08/09/1994 | Rosenblatt et al.     |       |           |                            |
|                  | 5,349,599    | 09/20/1994 | Larkins               |       |           |                            |
|                  | 5,351,256    | 09/27/1994 | Schneider et al.      |       |           |                            |
|                  | 5,359,447    | 10/25/1994 | Hahn et al.           |       |           |                            |
|                  | 5,359,618    | 10/25/1994 | Lebby et al.          |       |           |                            |
|                  | 5,363,397    | 11/08/1994 | Collins et al.        |       |           |                            |
|                  | 5,373,520    | 12/13/1994 | Shoji et al.          |       |           |                            |
|                  | 5,373,522    | 12/13/1994 | Holonyak, Jr., et al. |       |           |                            |
|                  | 5,376,580    | 12/27/1994 | Kish et al.           |       |           |                            |
|                  | 5,386,426    | 01/31/1995 | Stephens              |       |           |                            |

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(1139.1131101)Serial No.:  
10/622,042

LIST OF PATENTS AND PUBLICATIONS FOR  
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July 17, 2003

Group Art:

unknown

## U.S. PATENT DOCUMENTS

| Examiner Initial | Document No.      | Date       | Name              | Class | Sub Class | Filing Date If Appropriate |
|------------------|-------------------|------------|-------------------|-------|-----------|----------------------------|
|                  | US2001/0004414 A1 | 06/21/2001 | Kuhn et al.       |       |           |                            |
|                  | US2002/0154675 A1 | 10/24/2002 | Deng et al.       |       |           |                            |
|                  | US2003/0072526 A1 | 04/17/2003 | Kathman et al.    |       |           |                            |
|                  | 4,317,085         | 02/23/1982 | Brunham et al.    |       |           |                            |
|                  | 4,466,694         | 08/21/1984 | MacDonald         |       |           |                            |
|                  | 4,660,207         | 04/21/1987 | Svilans           |       |           |                            |
|                  | 4,675,058         | 06/23/1987 | Plaster           |       |           |                            |
|                  | 4,784,722         | 11/15/1988 | Liau et al.       |       |           |                            |
|                  | 4,885,592         | 12/05/1989 | Kofol et al.      |       |           |                            |
|                  | 4,901,327         | 02/13/1990 | Bradley           |       |           |                            |
|                  | 4,943,970         | 07/24/1990 | Bradley           |       |           |                            |
|                  | 4,956,844         | 09/11/1990 | Goodhue et al.    |       |           |                            |
|                  | 5,031,187         | 07/09/1991 | Orenstein et al.  |       |           |                            |
|                  | 5,052,016         | 09/24/1991 | Mahbobjadeh       |       |           |                            |
|                  | 5,056,098         | 10/08/1991 | Anthony et al.    |       |           |                            |
|                  | 5,062,115         | 10/29/1991 | Thornton          |       |           |                            |
|                  | 5,068,869         | 11/26/1991 | Wang et al.       |       |           |                            |
|                  | 5,079,774         | 01/07/1992 | Mendez et al.     |       |           |                            |
|                  | 5,115,442         | 05/19/1992 | Lee et al.        |       |           |                            |
|                  | 5,117,469         | 05/26/1992 | Cheung et al.     |       |           |                            |
|                  | 5,140,605         | 08/18/1992 | Paoli et al.      |       |           |                            |
|                  | 5,157,537         | 10/20/1992 | Rosenblatt et al. |       |           |                            |
|                  | 5,158,908         | 10/27/1992 | Blonder et al.    |       |           |                            |